

4,4' Methylenedianiline (MDA) for General Industry



**U.S. Department of Labor
Occupational Safety and Health Administration**

**OSHA 3135
1993 (Reprint)**

Report Documentation Page

Report Date 00001993	Report Type N/A	Dates Covered (from... to) -
Title and Subtitle 4,4' Methylenedianiline (MDA for General Industry		Contract Number
		Grant Number
		Program Element Number
Author(s)		Project Number
		Task Number
		Work Unit Number
Performing Organization Name(s) and Address(es) U.S. Department of Labor Occupational Safety & Health Administration 200 Constitution Avenue Washington, DC 20210		Performing Organization Report Number OSHA 3135
Sponsoring/Monitoring Agency Name(s) and Address(es)		Sponsor/Monitor's Acronym(s)
		Sponsor/Monitor's Report Number(s)
Distribution/Availability Statement Approved for public release, distribution unlimited		
Supplementary Notes		
Abstract On August 10, 1992, the Occupational Safety and Health Administration (OSHA) issued a final standard on the regulation of exposure to 4,4' Methylenedianiline (MDA) in Volume 29 of the Code of Federal Regulations (29 CFR) Part 1910.1050. Coverage of this standard applies to general industry (primary chemical manufacture, reprocessing, filament winding, potting, and encapsulating) and to the maritime industry. OSHA issued a separate standard for MDA exposure in the construction industry in 29 CFR 1926.60. In September 1983, OSHA and the Environmental Protection Agency (EPA) jointly published an advanced notice of proposed rulemaking (ANPR). EPA later issued a notice under section 4(f) of the Toxic Substances Control Act (TSCA) indicating that exposure to MDA presents a significant risk to humans as a carcinogen. EPA based this conclusion on studies performed by the National Toxicology Program (NTP) and on data collected by the Oak Ridge National Laboratories that supported findings of MDA as a carcinogen in test animals. The ability of MDA to induce tumors in animals-suggestive evidence that MDA may induce bladder tumors in humans and data indicating that MDA interacts with genetic material led to the conclusion that this chemical is an animal carcinogen and is a possible carcinogen to humans.		
Subject Terms		

Report Classification unclassified	Classification of this page unclassified
Classification of Abstract unclassified	Limitation of Abstract UU
Number of Pages 32	

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**U.S. Department of Labor
Robert B. Reich, Secretary**

Occupational Safety and Health Administration

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Contents

	Page
Introduction	1
Scope and Application	2
Provisions of the Standard	3
Permissible Exposure Limit	3
Regulated Areas	3
Labels and Signs	4
Exposure Monitoring and Medical Surveillance	5
Methods of Compliance	7
Compliance Program	7
Control Measures	7
Respiratory Protection	8
Hygiene Facilities and Practices	9
Housekeeping	9
Temporary Removal	9
Personal Protective Equipment and Clothing	10
Recordkeeping	11
Training and Education	12
Other Sources of OSHA Assistance	13
Safety and Health Program Management Guidelines	13
State Programs	13
Consultation Services	14
Voluntary Protection Programs (VPP)	14
Training and Education	14
Glossary	16
Related Publications	17
States with Approved Plans	18
OSHA Consultation Project Directory	21
OSHA Area Offices	23
OSHA Regional Offices	25

Background

On August 10, 1992, the Occupational Safety and Health Administration (OSHA) issued a final standard on the regulation of exposure to 4,4' Methylenedianiline (MDA) in Volume 29 of the **Code of Federal Regulations (29 CFR) Part 1910.1050**. Coverage of this standard applies to general industry (primary chemical manufacture, reprocessing, filament winding, potting, and encapsulating) and to the maritime industry. OSHA issued a separate standard for MDA exposure in the construction industry in 29 CFR 1926.60.

In September 1983, OSHA and the Environmental Protection Agency (EPA) jointly published an advanced notice of proposed rulemaking (ANPR). EPA later issued a notice under section 4(f) of the Toxic Substances Control Act (TSCA) indicating that exposure to MDA presents a significant risk to humans as a carcinogen.

EPA based this conclusion on studies performed by the National Toxicology Program (NTP) and on data collected by the Oak Ridge National Laboratories that supported findings of MDA as a carcinogen in test animals.¹ The ability of MDA to induce tumors in animals-suggestive evidence that MDA may induce bladder tumors in humans and data indicating that MDA interacts with genetic material led to the conclusion that this chemical is an animal carcinogen and is a possible carcinogen to humans.

On July 5, 1985, EPA referred all MDA rulemaking to OSHA under section 4(f) of TSCA. In response, OSHA determined -- based on the previously cited studies -- that there is a reasonable basis to believe that the manufacture and use of MDA presents a significant risk to the health of exposed workers and that risk may be eliminated or reduced to a significant extent by a workplace standard that regulates workers' exposure.

Routes of exposure to MDA include skin absorption, inhalation, and ingestion. Short-term (acute) overexposure to MDA may produce fever, chills, loss of appetite, vomiting, and/or jaundice; direct contact may irritate skin, eyes, and mucous membranes. Long-term (chronic) overexposure may cause cancer, even at relatively low concentrations, and/or damage to the liver, kidneys, blood, and spleen.

¹Preamble to *Occupation/ Exposure to 4,4' Methylenedianiline (MDA); Final Rule*, as cited in section 4(f) of the Toxic Substances Control Act (TSCA) on April 27, 1983 (48 FR 19078), (FR 57(154):35631, August 10, 1992).

OSHA found thereto be no nonregulatory alternatives that adequately protect most workers from the adverse health effects associated with MDA exposure.

MDA is a light brown crystalline solid with a faint amino-like odor. It is slightly soluble in water and very soluble in alcohol and benzene. MDA is produced commercially by the condensation of aniline and formaldehyde. Crude MDA, (40-60 percent) is either a liquid or a hard wax-like substance. Purified MDA (99 percent) is either light yellow crystalline flakes or white granules.

Ninety-eight percent of MDA currently produced is used directly in the manufacture of 4,4' Methylenediphenyl diisocyanate (MDI).² The remaining 2 percent of MDA is used as a precursor for the manufacture of plastic fibers, antioxidants, dyestuff intermediates, corrosion preventatives, and special polymers. Purified MDA is used in manufacturing epoxy resin curing agents, wire coating applications, polyurethane co-reactants, pigments and dyes, and defense applications.

U.S. production of MDA totaled approximately 600 million pounds per year in 1986. According to 1985-1986 figures, 3,836 workers were potentially exposed in 11 sectors of industry with an additional 189 maintenance workers in these areas as well.³

The following sections discuss the MDA standard as it pertains to general industry. OSHA also has developed a separate booklet that discusses the MDA standard's application to the construction industry.

Scope and Application

This publication discusses OSHA's standard (29 CFR 191 0.1050) as it applies to all occupational exposures to MDA in general industry where it is produced, released, stored, handled, used, or transported. Exceptions include --

- the processing, using, and handling of MDA products where initial monitoring or objective data indicate the product is not capable of releasing MDA in excess of the action level under

²(FR 57(154):35633, August 10, 1992).

³(FR 57(154):35641, August 10, 1992).

- can occur;⁴
- the storing, transporting, distributing, or selling of MDA in intact containers sealed to contain MDA dusts, vapors, or liquids;
 - materials in any form that contain less than 0.1 percent MDA by weight or volume; and
 - finished articles containing MDA.

Provisions of the Standard

Permissible Exposure Limit

Time-Weighted Average and Short-Term Exposure Limit

The employer must ensure that no employee is exposed to MDA above the permissible exposure limit (PEL) of 10 parts per billion (ppb) as an 8-hour time-weighted average (TWA) or a short-term exposure limit (STEL) of 100 ppb averaged over a 15-minute sampling period.

Action Level

The action level for a concentration of airborne MDA is 5 ppb as an 8-hour TWA. Employers must begin compliance activities such as exposure monitoring, medical surveillance, or temporary removal as soon as the action level is reached or exceeded.

Regulated Areas

The employer must establish regulated areas where airborne concentrations of MDA exceed or may reasonably be expected to exceed the PEL and where employees handle or use non-airborne MDA liquids or mixtures. Regulated areas must be demarcated from the rest of the workplace so that potential exposure is limited.

Only authorized personnel may enter regulated areas. All persons who enter must be supplied with, and required to use, personal protective equipment and clothing. No eating, drinking, smoking, chewing of tobacco or gum, or applying of cosmetics is permitted in regulated areas.

⁴ The employer must maintain records of the initial monitoring results or the objective data that support the exemption.

Warning signs must be posted in each regulated area and at all entrances or accessways to the areas. These signs must bear the following information:

**DANGER
MDA
MAY CAUSE CANCER
LIVER TOXIN
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED TO BE WORN IN THIS AREA**

Labels and Signs

The employer must ensure that labels or other appropriate forms of warning are provided for containers of MDA anywhere in the workplace. The labels shall comply with the requirements of OSHA's ***Hazard Communication Standard***, 29 CFR 1910.1200(f)⁵ and include the following legends:

Labels for containers of **Pure MDA** must contain the following information:

**DANGER
CONTAINS MDA
MAY CAUSE
CANCER**

Warning labels for containers of **Mixtures containing MDA** must include the following information:

**DANGER
CONTAINS MDA
CONTAINS MATERIALS WHICH MAY CAUSE
CANCER
LIVER TOXIN**

⁵Under the provisions of 29 CFR 1910.1200, employers are responsible for informing employees of the hazards and the identities of workplace chemicals to which they are exposed to when working.

Exposure Monitoring and Medical Surveillance

Each employer who has a workplace or worksite covered by this standard must perform initial monitoring for all employees who are, or may reasonably be expected to be, exposed to airborne concentrations of MDA at or above the action level. If the required initial monitoring reveals employee exposure at or above the action level, but at or below the PEL, the employer must repeat monitoring at least every 6 months. If exposure is above the PEL, the employer must repeat monitoring at least every 3 months. If initial monitoring reveals employee exposure to be below the action level, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

The employer must reinitiate monitoring when there has been a change in production process, chemicals, control equipment, personnel, or work practices that may result in new or additional exposures to MDA or when there is any reason to suspect a change that may result in new or additional exposures.

Routine inspections of employee dermal areas (hands, face, forearms) potentially exposed to MDA must be performed by the employer. Other potential dermal exposure must be referred to medical personnel for observation. If the employer determines an employee has been exposed to MDA, the employer must locate the source, implement protective measures for correction, and maintain records of corrective actions.

Employees must be notified in writing, either individually or by posting of results in an accessible location, within 15 days after the receipt of results of any monitoring performed. The written notification must contain corrective action being taken to reduce employee exposure to or below the PEL, whenever the PEL is exceeded.

The employer also must institute a medical surveillance program for employees who --

- are exposed to MDA at or above the action level for 30 or more days per year;
- are subject to dermal exposure for 15 or more days per year;
- are exposed in emergency situations; and
- the employer has reason to believe are being dermally exposed or who show signs or symptoms of MDA exposure.

Each employee must receive an initial medical exam within 150 days of the effective date of initial assignment. The physical exam must include

all routine exam parameters and exams for signs of liver disease and skin exposure. Lab tests must include liver function tests and urinalysis as well as additional tests necessary in the opinion of the physician.

All medical exams and procedures must be performed by or under the supervision of a licensed physician, provided at no cost to the employee, and given at a reasonable time and place. Follow-up medical exams must be provided at least annually after the initial exam. Also, if an employee is exposed to a potentially hazardous amount of MDA in an emergency situation, the employer must provide a medical exam at that time.

The employer must provide the examining physician the following information:

- a copy of the OSHA MDA regulation and its appendices;
- a description of the affected employee's duties as related to potential exposure to MDA;
- the current actual or representative MDA exposure level;
- a description of personal protective equipment currently in use or recommended; and
- information from previous employment-related medical exams.

The employer must provide a written copy of the examining physician's opinion to the affected employee within 15 days of receipt. The report should include --

- occupationally pertinent results of the exam and test; the physician's opinion on detected medical conditions that would place the employee at an increased risk of material impairment of health from exposure to MDA;
- physician recommended limits upon the employee's exposure to MDA or upon use of personal protective equipment and clothing and respirators; and
- a statement that the employee has been informed by the physician of results of the medical exam and medical conditions resulting from MDA exposure, which require further explanation or treatment.

The physician, however, is not to reveal in the written opinion given to the employer any specific findings or diagnoses unrelated to occupational exposure to MDA.

Methods of Compliance

Compliance Program

A written compliance program must be established and implemented to reduce employee exposure to the PEL or below by the use of engineering and work practice controls and by the use of respiratory protection where permitted. The plan must include a schedule for periodic maintenance and a written plan for emergency situations. The emergency plan must specifically provide that employees engaged in correcting emergency conditions be equipped with the appropriate required personal protective equipment and clothing until the emergency is abated. A provision for alerting and evacuating affected employees also must be included.

Employees who face potential exposure (direct and indirect) to MDA must be alerted promptly. Those employees not engaged in correcting the emergency must be evacuated immediately.

The written plans must be reviewed at least once every 12 months to ensure they reflect the current status of the program.

The written compliance program must be made available for examination and copying to the Assistant Secretary for OSHA, the Director of the National Institute for Occupational Safety and Health (NIOSH), and affected employees and their designated representatives, upon request.

Control Measures

Engineering and work practice controls are the primary methods used to reduce occupational exposure to MDA. Engineering controls and work practices must be instituted to reduce and maintain employee exposure to MDA at or below the PEL except when the employer can establish that these controls are not feasible.

Engineering controls reduce employee exposure in the workplace either by removing or isolating the hazard or isolating the worker from exposure. Local exhaust ventilation, general ventilation systems, and special isolation devices or enclosures are examples of engineering controls. Engineering controls must be examined and maintained, or replaced, on a scheduled basis. In circumstances where engineering controls alone do not reduce MDA exposure to the PEL, however, respiratory protection must be used as well.

Proper work practice controls reduce the likelihood of exposure by altering the manner in which a task is performed. Safe work practices required under the MDA standard include, but are not limited to, maintaining separate hygiene facilities (i.e., lunchrooms, change areas, and shower facilities) and requiring proper housekeeping practices (visual inspection program, clean-up methods, waste removal practices).

Under the MDA standard, the administrative control of temporary removal may be instituted to remove the worker from the hazard in the workplace, when appropriate. Worker rotation, however, cannot be used to reduce exposures to MDA.

Respiratory Protection

Where feasible engineering controls and work practices are not sufficient to reduce MDA exposure to the PEL or below, the employer must use them to reduce employee exposure to the lowest achievable levels and supplement them through the use of respirators.

Respirators must be used in the following circumstances:

- while feasible engineering and work practice controls are being installed or implemented;
- in work operations for which engineering and work practice controls are not feasible;
- in work situations where feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below the PEL; and
- in emergencies.

Respirators must be selected from among those approved by the Mine Safety and Health Administration (MSHA) and NIOSH. Where respiratory protection is required, the employer must develop a respiratory protection program.

Respirators and the respiratory protection program must be provided at no cost to the employee.

If employees cannot wear negative-pressure respirators, they must be given the option of wearing a positive-pressure respirator or a supplied-air respirator operated in continuous flow or pressure demand mode. Where air-purifying respirators are used, the air-purifying element must be replaced as needed, to maintain effectiveness. Respirator fit testing must be performed and the results recorded at the time of initial fitting and at least annually thereafter for negative-pressure respirators.

Hygiene Facilities and Practices

Employees required to work in regulated areas must be provided clean change rooms, shower facilities, and lunchrooms. Separate storage of personal protective equipment and clothing and street clothes must be maintained.

Employees must shower at the end of a work shift and may not leave the worksite wearing any protective equipment or clothing worn during the work shift. Where dermal exposure to MDA occurs, materials spilled on the skin must be removed as soon as possible by methods that do not facilitate the dermal absorption of MDA.

Separate lunchroom facilities located within the workplace and in areas of potential airborne exposure to MDA must have a positive-pressure, temperature controlled, filtered air supply. Lunch areas may not be located in areas within the workplace where the potential of dermal exposure to MDA exists.

Employees must wash their hands and faces prior to eating, drinking, smoking, or applying cosmetics. No employees may enter the lunchroom with protective equipment or clothing.

Housekeeping

All surfaces must be maintained as free as possible of accumulations of MDA. A regular visual inspection program must be instituted to detect MDA leaks, spills, or discharges. All leaks must be repaired, and liquid or dust spills promptly cleaned. Compressed air may not be used to clean contaminated surfaces. Shoveling, dry sweeping, and other methods of dry clean-up maybe used where HEPA⁶-filtered vacuuming and/or wet cleaning are not feasible or practical. All waste, scrap, debris, bags, containers, equipment, or clothing contaminated with MDA must be collected and disposed of in a way that prevents re-entry of MDA into the workplace.

Temporary Removal

An employee must be removed from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may

⁶High efficiency particulate air (HEPA) filter.

occur following an initial exam, periodic exams, an emergency situation, or an additional examination when

- the employee exhibits signs and/or symptoms indicative of acute exposure to MDA; or
- the examining physician determines that an employee's abnormal liver function tests are not associated with MDA exposure but that the abnormalities may be exacerbated as a result of occupational exposure to MDA.

Following a final medical determination that the employee has a detected medical condition that increases the risk of material impairment of health from MDA exposure, the employer must remove the employee from work environments in which exposure to MDA is at or above the action level or where dermal exposure to MDA may occur.

Employees may return to former job status

- when they no longer show signs or symptoms of exposure to MDA;
- upon the advice of the physician; or
- when a subsequent final medical determination results in a medical finding" that employees no longer have a detected medical condition that puts them at risk.

Personal Protective Equipment and Clothing

The employer must provide, at no cost to the employee, and ensure use of personal protective equipment and clothing to prevent contact with MDA where:

- employees are subject to dermal exposure to MDA;
- liquids containing MDA can be splashed into the eyes; and
- airborne concentrations of MDA are in excess of the PEL.

Recommended personal protective equipment and clothing includes, but is not limited to aprons, coveralls or full-body work clothing, gloves, head and foot coverings, face shields, and splashproof safety goggles.

Employees must remove MDA-contaminated protective equipment and clothing in change rooms at the end of the work shift. Contaminated work clothing or equipment must be stored in closed labeled containers. Only authorized employees may take contaminated equipment or clothing out of change rooms for laundering, maintenance, or disposal.

The employer must ensure that personal protective equipment and clothing is laundered, cleaned, repaired, or replaced to maintain its effectiveness. Contaminated clothing must be transported in properly labeled, sealed, impermeable bags or containers. Any person who launders or cleans MDA-contaminated clothing or equipment must be informed of the potentially harmful effects of exposure. The employer also must make known that removal of MDA by blowing or shaking is prohibited.

Recordkeeping

The employer must establish and maintain an accurate record of all monitoring data as well as objective data used to demonstrate that the processing, use, or handling of products is exempt from requirements of the standard for initial monitoring. The employer must keep for 30 years an accurate record of all measurements taken to monitor employees' exposure to MDA. This record must include:

- the date of measurement, number, duration, and results of each sample taken, including a description of the procedure used to determine representative employee exposures;
- identification of the sampling and analytical methods used; a description of the type of respiratory protective devices worn; and
- the name, social security number, job classification, and exposure levels for each employee monitored and all other employees whose exposure measurement it represents.

The employer must maintain an accurate record for each employee subject to medical surveillance. The record must include:

- the name, social security number, and description of duties;
- a copy of the examining physician's written opinion on initial, periodic, or special exams -- including results of medical exams and all tests, opinions, and recommendations;
- results of airborne exposure monitoring done for the employee and the representative exposure levels supplied to the physician; and
- any employee medical complaints related to exposure to MDA.

All required, maintained records must be made available, upon request, to the OSHA Assistant Secretary and the Director of NIOSH in accordance with ***Access to Employee Exposure and Medical Records***, 29 CFR 1910.20.

If the employer ceases to do business and there is no successor to receive the records, the employer must notify the Director of NIOSH, at least 90 days prior to termination, and transmit the records to the Director within that period.

Training and Information

In addition to the warning signs and labels required in regulated areas and on MDA containers, employers must provide material safety data sheets (MSDSs) and training and written information on MDA. MSDSS must comply with OSHA's ***Hazard Communication Standard***, 29 CFR 1910.1200.

Also, the employer must develop a training program for all employees exposed to airborne concentrations of MDA in accordance with provisions of the ***Hazard Communication Standard***. Training must be provided at the time of initial assignment and at least annually thereafter.

The content of the training program is intended to inform employees of

- the hazards to which they are exposed;
- the necessary steps to protect themselves, including those to be taken during emergency situations;
- limitations and the proper use of respirators and protective equipment;
- a description of medical examinations and their purpose; and
- implementation of work practices and the use of available engineering controls.

The employer also must

- provide an explanation of the contents of the MDA standard and where a copy is available;
- describe the required medical surveillance program; and
- describe the medical removal provision.

All training materials, including a copy of the MDA standard, must be available in writing to all employees without cost and to the Assistant Secretary of OSHA and the Director of NIOSH, upon request.

Other Sources of OSHA Assistance

Safety and Health Management Guidelines

Effective management of worker safety and health protection is a decisive factor in reducing the extent and severity of work-related injuries and illnesses and their related costs. To assist employers and employees in developing effective safety and health programs, OSHA published recommended ***Safety and Health Management Guidelines*** (January 26, 1989, 54 FR: 3908-3916). These voluntary guidelines apply to all places of employment covered by OSHA.

The guidelines identify four general elements that are critical to the development of a successful safety and health management program:

- management commitment and employee involvement,
- worksite analysis,
- hazard prevention and control, and
- safety and health training.

The guidelines recommend specific actions, under each of these general elements, to achieve an effective safety and health program.

State Programs

The Occupational Safety and Health Act of 1970 encourages states to develop and operate their own job safety and health plans. OSHA approves and monitors these plans. There are currently 25 state plan states; 23 of these states administer plans covering both private and public (state and local government) employment; the other 2 states, Connecticut and New York, cover the public sector only.

The 25 states and territories with their own OSHA-approved occupational safety and health plans must adopt standards identical to, or at least as effective as, the federal standards. Until a state standard is promulgated, OSHA will provide interim enforcement assistance, as appropriate, in these states. A listing of states with approved plans appears at the end of this booklet.

Consultation Services

Consultation assistance is available on request to employers who want help in establishing and maintaining a safe and healthful workplace. Largely funded by OSHA, the service is provided at no cost to the employer. Primarily developed for smaller employers with more hazardous operations, the consultation service is delivered by state government agencies or universities employing professional safety consultants and health consultants. Comprehensive assistance includes an appraisal of all mechanical, physical work practices, and environmental hazards of the work-place and all aspects of the employer's present job safety and health program. No penalties are proposed or citations issued for hazards identified by the consultant.

For more information concerning consultation assistance, see the list of consultation projects listed at the end of this publication.

Voluntary Protection Programs (VPPs)

Voluntary protection programs and onsite consultation services, when coupled with an effective enforcement program, expand worker protection to help meet the goals of the OSH Act. The three VPPs -- Star, Merit, and Demonstration -- are designed to recognize outstanding achievement by companies that have successfully incorporated comprehensive safety and health programs into their total management system. They motivate others to achieve excellent safety and health results in the same outstanding way as they establish a cooperative relationship between employers, employees, and OSHA.

For additional information on VPPs and how to apply, contact the OSHA national, regional, or area offices listed at the end of this publication.

Training and Education

OSHA's area offices offer a variety of informational services, such as publications, audiovisual aids, technical advice, and speakers for special engagements. OSHA's Training Institute in Des Plaines, IL, provides basic and advanced courses in safety and health for federal and state compliance officers, state consultants, federal agency personnel, and private sector employers, employees, and their representatives.

OSHA also provides funds to nonprofit organizations, through grants, to conduct workplace training and education in subjects where OSHA believes there is a lack of workplace training. Grants are awarded annually, with a 1-year renewal possible. Grant recipients are expected to contribute 20 percent of the total grant cost.

For more information on grants, training and education, contact the OSHA Training Institute, Office of Training and Education, 1555 Times Drive, Des Plaines, IL 60018, (708) 297-4810.

For further information on any OSHA program, contact your nearest OSHA regional or area office listed at the end of this publication.

Glossary

Authorized person - Any person specifically authorized by the employer and whose duties require the person to enter a regulated area, or any person entering such an area as a designated representative of employees, for the purpose of exercising the right to observe monitoring and measuring procedures.

Container - Any barrel, bottle, can, cylinder, drum, reaction vessel, storage tank, commercial packaging or the like, but does not include piping systems.

Emergency - Any occurrence such as equipment failure, rupture of containers, or failure of control equipment that results in an unexpected and potentially hazardous release of MDA.

Finished article containing MDA - A manufactured item formed to a specific shape or design during manufacture; that has end – use function(s) dependent in whole or part upon its shape or design during end use; and that is fully cured by virtue of having been subjected to the conditions (temperature, time) necessary to complete the desired chemical reaction.

Dermal exposure to MDA - Exposure to the skin that occurs where employees are engaged in the handling application, or use of mixtures or materials containing MDA, with any of the following non-airborne forms of MDA: liquid, powdered, granular, or flaked mixtures containing MDA in concentration greater than 0.1 percent by weight or volume; and materials other than "finished articles containing MDA" in concentration greater than 0.1 percent by weight or volume.

4,4' Methylenedianiline or MDA - The chemical, 4,4'-diaminodiphenylmethane, Chemical Abstract Service Registry number 101-77-9, in the form of a vapor, liquid, or solid. The definition also includes the salts of MDA.

Regulated areas - Areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed the permissible exposure limits or where dermal exposure to MDA can occur.

STEL - Short-term exposure limit as determined by any 15-minute sampling period.

Related Publications

Single free copies of the following publications can be obtained from the OSHA Publications Office, 200 Constitution Avenue, NW, Washington, DC 20210. Send a self-addressed mailing label with your request.

All About OSHA - OSHA 2056

Chemical Hazard Communication - OSHA 3084

Consultation Services for the Employer - OSHA 3047

How to Prepare for Workplace Emergencies - OSHA 3088

OSHA Employee Workplace Rights - OSHA 3021

OSHA Inspections - OSHA 2098

Personal Protective Equipment - OSHA 3077

Respiratory Protection - OSHA 3079

The following publications are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, (202) 783-3238. Include GPO Order No. and make checks payable to Superintendent of Documents.

Hazard Communication - A Compliance Kit (OSHA 3104) (A reference guide to step-by-step requirements for compliance with the OSHA standard.) Order No. 929-022-00000-9; cost \$18.00 domestic; \$22.50 foreign.

Hazard Communication Guidelines for Compliance (OSHA 3111) Order No. 029-016-00127-1; cost \$1.00.

Principal Emergency Response and Preparedness Requirements in OSHA Standards and Guidance for Safety and Health Programs (OSHA 3122)
Order No. 029-016-00136-1; cost \$2.50.

Training Requirements in OSHA Standards and Training Guidelines (OSHA 2254) Order No. 029-016-00137-9; cost \$4.25.

States with Approved Plans

States administering their own occupational safety and health programs through plans approved under section 18(b) of the Occupational Safety and Health Act of 1970 must adopt standards and enforce requirements that are at least as effective as federal requirements.

There are currently 25 state plan states; 23 cover the private and public (state and local government) sectors and 2 cover the public sector only (Connecticut and New York).

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Campus 12-Room 457
Albany, NY 12240
(518) 457-2741

COMMISSIONER

North Carolina Department
of Labor
4 West Edenton Street
Raleigh, NC 27601
(919) 733-0360

ADMINISTRATOR

Oregon Occupational Safety
and Health Division
Oregon Department
of Insurance and Finance,
Room 160
Labor and Industries Building
Summer and Chemeketa
Streets, NE
Salem, OR 97310
(503) 378-3272

SECRETARY

Puerto Rico Department
of Labor and Human
Resources
Prudencio Rivera Martinez
Building
505 Munoz Rivera Avenue
Hato Rey, PR 00918
(809) 754-2119

COMMISSIONER

South Carolina Department
of Labor
3600 Forest Drive
P.O. BOX 11329
Columbia, SC 29211-1329
(803) 734-9594

COMMISSIONER

Tennessee Department of Labor
501 Union Building
Suite "A" - 2nd Floor
Nashville, TN 37243-0655
(615) 741-2582

ADMINISTRATOR

Utah Occupational Safety
And Health
160 East 300 South
P.O. BOX 5800
Salt Lake City, UT 84110-5800
(801) 530-6900

COMMISSIONER

Vermont Department of Labor
and Industry
120 State Street
Montpelier, VT 05620
(802) 828-2288

COMMISSIONER

Virgin Islands Department
of Labor
2131 Hospital Street
Christiansted
St. Croix, VI 00840-4666
(809) 773-1994

COMMISSIONER

Virginia Department of Labor
and Industry
Powers-Taylor Building
13 South 13th Street
Richmond, VA 23219
(804) 786-2376

DIRECTOR

Washington Department
of Labor and Industries
General Administration
Building
11th & Columbia Streets
Room 334-AX-31
Olympia, WA 98504-0631
(206) 753-6307

DIRECTOR

Department of Employment
Division of Employment Affairs
Occupational Safety
and Health Administration
Herschler Building, 2nd Floor
East
122 West 25th Street
Cheyenne, WY 82002
(307) 777-7672

OSHA Consultation Project Directory

Consultation programs provide free services to employers who request help in identifying and correcting specific hazards, want to improve their safety and health programs, and/or need further assistance in training and education. Funded by OSHA and delivered by well-trained professional staff of state governments, consultation services are comprehensive, and include an appraisal of all workplace hazards, practices, and job safety and health programs; conferences and agreements with management; assistance in implementing recommendations; and a follow-up appraisal to ensure that any required corrections are made. For more information on consultation programs, contact the appropriate office in your state listed below.

State	Telephone
Alabama	(205) 348-3033
Alaska	(907) 264-2599
Arizona	(602) 542-5795
Arkansas	(501) 682-4522
California	(415) 703-4441
Colorado	(303) 491-6151
Connecticut	(203) 566-4550
Delaware	(302) 577-3908
District of Columbia	(202) 576-6339
Florida	(904) 488-3044
Georgia	(404) 894-8274
Guam	(671) 646-9244
Hawaii	(808) 548-4155
Idaho	(208) 385-3283
Illinois	(312) 814-2337
Indiana	317) 232-2688
Iowa	(515) 281-5352
Kansas	(913) 296-4386
Kentucky	(502) 564-6895
Louisiana	(504) 342-9601
Maine	(207) 289-6460
Maryland	(301) 333-4218
Massachusetts	(617) 727-3463
Michigan	(517) 335-8250(H) (517) 322-1809(S)
Minnesota	(612) 297-2393
Mississippi	(601) 987-3981

H – Health S – Safety

Missouri	(314) 751-3403
Montana	(406) 444-6401
Nebraska	(402) 471-4717
Nevada	(702) 486-5016
New Hampshire	(603) 271-2024
New Jersey	(609) 292-7036
New Mexico	(505) 827-2885
New York	(518) 457-2481
North Carolina	(919) 733-3949
North Dakota	(701) 221-5188
Ohio	(614) 644-2631
Oklahoma	(405) 528-1500
Oregon	(503) 378-3272
Pennsylvania	(412) 357-2561
Puerto Rico	(809) 754-2171
Rhode Island	(401) 277-2438
South Carolina	(803) 734-9599
South Dakota	(605) 688-4101
Tennessee	(615) 741-7036
Texas	(512) 440-3834
Utah	(801) 530-6868
Vermont	(802) 828-2765
Virginia	(804) 786-6613
Virgin Islands	(809) 772-1315
Washington	(206) 586-0963
West Virginia	(304) 348-7890
Wisconsin	(608) 266-8579 (H)
	(414) 521-5063 (S)
Wyoming	(307) 777-7786

H – Health S – Safety

OSHA Area Offices

Area	Telephone
Albany, NY	(518) 464-6742
Albuquerque, NM	(505) 766-3411
Allentown, PA	(215) 776-0592
Anchorage, AK	(907) 271-5152
Appleton, WI	(414) 734-4521
Augusta, ME	(207) 622-8417
Austin, TX	(512) 482-5783
Avenel, NJ	(908) 750-3270
Baltimore, MD	(410) 962-2840
Baton Rouge, LA	(504) 389-0474
Bayside, NY	(718) 279-9060
Bellevue, WA	(206) 553-7520
Billings, MT	(406) 657-6649
Birmingham, AL	(205) 731-1534
Bismarck, ND	(701) 250-4521
Boise, ID	(208) 334-1867
Bowmansville, NY	(716) 684-3891
Braintree, MA	(617) 565-6924
Bridgeport, CT	(203) 579-5579
Calumet City, IL	(708) 891-3800
Carson City, NV	(702) 885-6963
Charleston, WV	(304) 347-5937
Cincinnati, OH	(513) 841-4132
Cleveland, OH	(216) 522-3818
Columbia, SC	(803) 765-5904
Columbus, OH	(614) 469-5582
Concord, NH	(603) 225-1629
Corpus Christi, TX	(512) 888-3257
Dallas, TX	(214) 320-2400
Denver, CO	(303) 844-5285
Des Plaines, IL	(708) 803-4500
Des Moines, IA	(515) 284-4794
Englewood, CO	(303) 843-4500
Erie, PA	(814) 833-5758
Fort Lauderdale, FL	(305) 424-0242
Fort Worth, TX	(817) 885-7025

Frankfort, KY	(502) 227-7024
Harrisburg, PA	(717) 782-3902
Hartford, CT	(203) 240-3152
Hasbrouck Heights, NJ	(201) 288-1700
Hato Rey, PR	(809) 766-5457
Honolulu, HI	(808) 541-2685
Houston, TX	(713) 286-0583
Houston, TX	(713) 591-2438
Indianapolis, IN	(317) 226-7290
Jackson, MS	(601) 965-4606
Jacksonville, FL	(904) 232-2895
Kansas City, MO	(816) 483-9531
Lansing, MI	(517) 377-1892
Little Rock, AR	(501) 324-6291
Lubbock, TX	(806) 743-7681
Madison, WI	(608) 264-5388
Marlton, NJ	(609) 757-5181
Methuen, MA	(617) 565-8110
Milwaukee, WI	(414) 297-3315
Minneapolis, MN	(612) 348-1994
Mobile, AL	(205) 441-6131
Nashville, TN	(615) 781-5423
New York, NY	(212) 264-9840
Norfolk, VA	(804) 441-3820
North Aurora, IL	(708) 896-8700
Oklahoma City, OK	(405) 231-5351
Omaha, NE	(402) 221-3182
Parsippany, NJ	(201) 263-1003
Peoria, IL	(309) 671-7033
Philadelphia, PA	(215) 597-4955
Phoenix, AZ	(602) 640-2007
Pittsburgh, PA	(412) 644-2903
Portland, OR	(503) 326-2251
Providence, RI	(401) 528-4669
Raleigh, NC	(919) 856-4770
Salt Lake City, UT	(801) 486-8405
San Francisco, CA	(415) 744-7120
Savannah, GA	(912) 652-4393
Smyrna, GA	(404) 984-8700
Springfield, MA	(413) 785-0123
St. Louis, MO	(314) 425-4249
Syracuse, NY	(315) 451-0808
Tampa, FL	(813) 626-1177
Tarrytown, NY	(914) 682-6153
Toledo, OH	(419) 259-7542
Tucker, GA	(404) 493-6644
Westbury, NY	(516) 334-3344
Wichita, KS	(316) 269-6644
Wilkes-Barre, PA	(717) 826-6538

U.S. Department of Labor Occupational Safety and Health Administration Regional Offices

Region I

(CT,* MA, ME, NH, RI, VT*)
133 Portland Street
1st Floor
Boston, MA 02114
Telephone: (617) 565-7164

Region II

(NJ, NY,* PR,* VI*)
201 Varick Street
Room 670
New York, NY 10014
Telephone: (212) 337-2378

Region III

(DC, DE, MD,* PA, VA,* WV)
Gateway Building, Suite 2100
3535 Market Street
Philadelphia, PA 19104
Telephone: (215) 596-1201

Region IV

(AL, FL, GA, KY,* MS, NC,* SC,* TN,*)
1375 Peachtree Street, N.E.
Suite 587
Atlanta, GA 30367
Telephone: (404) 347-3573

Region V

(IL, IN,* MI,* MN,* OH, WI)
230 South Dearborn Street
Room 3244
Chicago, IL 60604
Telephone: (312) 353-2220

Region VI

(AR, LA, NM,* OK, TX)
525 Griffin Street
Room 602
Dallas, TX 75202
Telephone: (214) 767-4731

Region VII

(IA,* KS, MO, NE)
911 Walnut Street, Room 406
Kansas City, MO 64106
Telephone: (816) 426-5861

Region VIII

(CO, MT, ND, SD, UT,* WY*)
Federal Building, Room 1576
1961 Stout Street
Denver, CO 80294
Telephone: (303) 844-3061

Region IX

**(American Samoa, AZ,* CA,* Guam, HI,*
NV,* Trust Territories
of the Pacific)**
71 Stevenson Street
Room 415
San Francisco, CA 94105
Telephone: (415) 744-6670

Region X

(AK,* ID, OR,* WA*)
1111 Third Avenue
Suite 715
Seattle, WA 98101-3212
Telephone: (206) 553-5930

*These states and territories operate their own OSHA-approved job safety and health programs (the Connecticut and New York plans cover public employees only). States with approved programs must have a standard that is identical to, or at least as effective as, the federal standard.